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EXAMINER
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HU, HENRY S

ART UNIT	PAPER NUMBER
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1713

DATE MAILED: 05/15/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/785,006	<b>Applicant(s)</b> GUARDA ET AL.	
	<b>Examiner</b> Henry S. Hu	<b>Art Unit</b> 1713	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on Election of April 4, 2006.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) 1-12 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 13 and 14 is/are rejected.
- 7) ☒ Claim(s) 13 is/are objected to.
- 8) ☒ Claim(s) 1-14 are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>2 pages</u> . | 6) <input type="checkbox"/> Other: _____  |

### DETAILED ACTION

1. This Office Action is in response to Election filed on April 4, 2006. **Applicant's election of Group III, Claims 13-14 is traversed with remarks on pages 1-2.** The traversal is on the ground(s) that it would not place an undue burden to search and examine the non-elected Group I (Claims 1-7) and Group II (Claims 8-12) with the elected Group III since they are so closely related in the field of linear PFPE polymeric compounds for application as lubricant. This is not found persuasive because each group is drawn to a technology apparently requiring search in different classification area. In the instant case Group I was drawn to a linear type compound perfluoropolyether having a specific formula (I), Group II is drawn to a process of making a linear type compound perfluoropolyether having formula (I), while Group III was drawn to a different subject matter as the use of a linear type compound perfluoropolyether as lubricant.

2. As discussed earlier, linear perfluoropolyether polymeric compounds from Group I can be prepared by some synthetic ways as known in the art, which are other than using the process of Group II. For instance, without using a reactive peroxidic and fluorination route (see prior art cited by Applicants on page 3 of specification). The process of using PFPEs as described in Group III involves a different subject matter: using the specific as a lubricant. However, the PFPE polymeric compounds as claimed can be used for other purpose other than lubrication. For instance, it can be used as a reaction medium or as a solvent as long as such a linear type

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perfluoropolyether compound will not react with others. Therefore, the scope of the claims, i.e., the metes and boundaries are distinct.

The requirement is still deemed proper and is therefore made FINAL. **Claims 1-14** with only one independent claim (Claim 1) are pending now, while nonelected **Claims 1-12** are all withdrawn from consideration. An action follows.

### ***Claim Objections***

3. Claim 13 is objected to because of the following informalities:

(a) The description of **Claim 1** at lines 4-5 inside **Claim 13**, the use of language as "selected from CF<sub>3</sub>-, CF<sub>3</sub>CF<sub>2</sub>-, C<sub>3</sub>F<sub>7</sub>-, C<sub>4</sub>F<sub>9</sub>-, ClCF<sub>2</sub>-, ClCF<sub>2</sub>CF<sub>2</sub>- " may be improper according to MPEP. A change to "selected from CF<sub>3</sub>-, CF<sub>3</sub>CF<sub>2</sub>-, C<sub>3</sub>F<sub>7</sub>-, C<sub>4</sub>F<sub>9</sub>-, ClCF<sub>2</sub>- or ClCF<sub>2</sub>CF<sub>2</sub>-" is needed.

4. (b) The description of **Claim 1** limitation inside **Claim 13**, the term "**preferably**" as described on **Claim 1** at lines 7, 9-10 and 12 is a relative term, which renders the claim **indefinite**. The term "**preferably**" is not defined by the claim or any dependent claim for the **low and high limit**, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably appraised of the scope of the invention. See MPEP § 2173.05(b). It is suggested citing such a limitation on a dependent claim.

***Claim Rejections - 35 USC § 112***

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

**Claims 13-14** are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

**Claims 13-14** provide for the use of a rubber part, but, since the claim does not set forth any steps involved in the method/process, it is unclear what method/process applicant is intending to encompass. A claim is indefinite where it merely recites a use without any active, positive steps delimiting how this use is actually practiced.

6. **Claims 13-14 are rejected under 35 U.S.C. 101 because the claimed recitation of a use, without setting forth any steps involved in the process, results in an improper definition of a process, i.e., results in a claim which is not a proper process claim under 35 U.S.C. 101.** See for example *Ex parte Dunki*, 153 USPQ 678 (Bd.App. 1967) and *Clinical Products, Ltd. v. Brenner*, 255 F. Supp. 131, 149 USPQ 475 (D.D.C. 1966).

***Claim Rejections - 35 USC § 102***

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. *The limitation of parent Claim 13 in present invention relates to the use of perfluoropolyethers as lubricants, wherein said perfluoropolyether is a linear type compound of perfluoropolyether having a specific formula (I) as  $T-O-(CF_2O)_n(CF_2CF_2O)_m(CF_2CF_2CF_2O)_r(CF_2CF_2CF_2CF_2O)_s-T_1$  with all the factors as specified in Claim 1.*

*See other limitation of dependent Claim 14.*

9. Claims 13-14 are rejected under 35 U.S.C. 102(b) as being anticipated by Flynn et al. (US 5,663,127 or its equivalent EP 694,602 A2).

Regarding the limitations of parent Claim 13, Flynn et al. in each of US and EP patent have disclosed a process for using various perfluoropolyether polymeric compounds as lubricant specifically. The type of perfluoropolyether polymeric compound fits into a specific formula of  $A[-(C_yF_{2y})-O-(C_4H_8O)_k-(C_3F_6O)_m-(C_2F_4O)_n-(CF_2O)_p-(C_zF_{2z})-]A'$ . In a very close examination on all the involved factors, some of Flynn's many perfluoropolyether polymeric compounds are structurally reading on the Claim 1 limitation of Claim 13 with the factors of both A and A' being both from nonhydrogen-containing monovalent organic groups such

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as -F, -CF<sub>3</sub> or -CF<sub>2</sub>CF<sub>3</sub> (column 4, line 27-43). It is noted that Flynn has also prepared many perfluoro-polyether polymer compounds with at least one of A and A' being hydrogen-containing end group (see abstract, line 1-6; column 4, line 39-45). According to Flynn's disclosure, y is 0-20, z is 0-20, while k, m, n and p can be the same or different, and range from 0 to 200. Therefore, at least some of Flynn's perfluoro-polyether polymeric compounds with repeating units randomly distributed (see column 4, line 34-35) are reading on the claimed linear perfluoropolyethers with four specified limitations on the factors n, m, r and s. In summary, Flynn clearly anticipates limitations of Claim 13.

10. Regarding the described **Claim 5** limitation inside **Claim 14**, both A and A' factors can be nonhydrogen-containing monovalent organic groups such as -CF<sub>2</sub>-C(O)-F and -C(O)-F (column 4, line 39-44). In view of the existence of fluorine content in such a high number, it would certainly and inherently possess hydro- and oil-repellency to surfaces as known in the art.

### ***Claim Rejections - 35 USC § 103***

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

- (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
  2. Ascertaining the differences between the prior art and the claims at issue.
  3. Resolving the level of ordinary skill in the pertinent art.
  4. Considering objective evidence present in the application indicating obviousness or nonobviousness.
12. Claim 13 is rejected under 35 U.S.C. 103(a) as being obvious over Scarati et al. (US 4,746,575).

Regarding the limitations of parent **Claim 13**, Scarati et al. have already disclosed a **process for using various perfluoropolyether polymeric and/or oligomeric compounds as lubricant** specifically for lubricating accessory elements which magnetic tapes coming in contact with (see title; column 1, line 7-11). In a very close examination, the PFPEs in **A4 class** as disclosed by Scarati may have incorporated **a combination of all four claimed repeating units including -C<sub>2</sub>F<sub>4</sub>O-, -CF<sub>2</sub>O-, -CF<sub>2</sub>CF<sub>2</sub>CF<sub>2</sub>O- and -CF<sub>2</sub>CF<sub>2</sub>CF<sub>2</sub>CF<sub>2</sub>O-** in the polymeric chain (column 6, line 10-17). Although Scarati does not specifically disclose the claimed four relationships on such four repeating factors, it would be obvious to obtain at least some from many of **Scarati's A4 compounds with repeating units randomly distributed** so as to read on the claimed linear perfluoropolyethers with four specified limitations on the factors n, m, r and s. Attention is directed to the fact that Scarati has already disclosed using factors for a



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variety of repeating units. For instance, m, n and q are integers and can be in a varied range (column 3, lines 55 – column 4, line 16).

13. Claim 14 is rejected under 35 U.S.C. 103(a) as being obvious over Scarati et al. (US 4,746,575) in view of Flynn et al. (US 5,663,127 or its equivalent EP 694,602 A2).

The above discussion of the disclosures of the prior art of Flynn for Claims 13-14 of this office action is incorporated here by reference. The above discussion of the disclosures of the prior art of Scarati for Claim 13 of this office action is also incorporated here by reference. Regarding **Claim 14**, **Scarati** is silent about the Claim 5 limitation to have applied a specific  $-(CF_2)_z-C(O)-F$  with z being 0-3 as end group(s) for T and T<sub>1</sub> so as to improve hydro- and oil-repellency to surfaces. Flynn in each of US and EP patent teaches that in the course of making linear perfluoropolyether polymeric and/or oligomeric compounds, both A and A' factors in the formula I can be nonhydrogen-containing monovalent organic groups either from the functional one such as  $-CF_2-C(O)-F$  and  $-C(O)-F$  or from non-functional one such as  $-F$ ,  $-CF_3$  or  $-CF_2CF_3$  (column 4, line 27-44). By doing so, all such obtained perfluoropolyethers can be useful as lubricants (see title). In view of the existence of **fluorine content** in such a high number, it would certainly and inherently possess hydro- and oil-repellency to surfaces as known in the art.

14. In light of the fact that both involving references are dealing with making PFPE compounds for lubrication use, its functional end groups  $-CF_2-C(O)-F$  and  $-C(O)-F$  are functionally equivalent and inter-exchangeable with non-functional end groups  $-F$ ,  $-CF_3$  and

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-CF<sub>2</sub>CF<sub>3</sub>. Therefore, one having ordinary skill in the art would have found it obvious to modify Scarati's PFPE preparation process by applying -CF<sub>2</sub>-C(O)-F and -C(O)-F to be the end group(s) as taught by Flynn. By doing so, such newly obtained perfluoropolyethers can be useful as lubricants with potential to be modified later. Additionally, the existence of high fluorine content would effectively enable hydro- and oil-repellency to surfaces. More diversified products may be thereby obtained.

### *Conclusion*

15. The prior art made of record and not relied upon is considered pertinent to applicants' disclosure. The following references relate to a method of using linear perfluoropolyethers as lubricant:

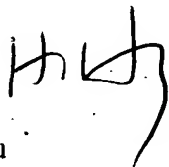
US Patent No. 6,509,509 B2 to Tonelli et al. only discloses a process for the preparation of perfluoropolyoxyalkylenes with one or two hydroxyl end groups (see title; abstract, line 1-8). Although mono-functional and/or bifunctional PFPEs may contain the claimed polyether as repeating units as well as may be applied to the same application as lubricant (column 1, line 23), it requires at least one of the end groups to be -CH<sub>2</sub>OH. Therefore, Tonelli fails to teach or fairly suggest the claimed linear PFPEs of present invention.

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16. Any inquiry concerning this communication or earlier communication from the examiner should be directed to **Dr. Henry S. Hu** whose telephone number is **(571) 272-1103**. The examiner can be reached on Monday through Friday from 9:00 AM –5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Wu, can be reached on (571) 272-1114. The fax number for the organization where this application or proceeding is assigned is **(571) 273-8300** for all regular communications.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Henry S. Hu

Patent Examiner, Art Unit 1713, USPTO

May 9, 2006



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